BASIC SERIES

USER MANUAL

FOR THE

BS 181

SINGLE CHANNEL POWER SUPPLY

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1.0 GENERAL DESCRIPTION

The BS 181 is designed to be a power supply in an ASL intercom system and can be used in portable as well as fixed applications.

This makes the BS 181 very versatile and ideal for use in applications where standard microphone cable is available and ease of setup is of paramount importance.

The intercom line power supply is fully protected and can drive at least 20 beltpacks operating at full power.

2.0 UNPACKING

The shipping carton contains the parts listed below.

* The BS 181
* Power cable
* Spare fuses
* User manual

If any are missing contact your dealer.

With the BS 181 will be a small packet of spare fuses. Please keep them in a safe place.

ASL has taken great care to ensure that this product reaches you in flawless condition.
After unpacking the unit please inspect for any physical damage to the unit, and retain the shipping carton and relevant packing materials for use should the unit need returning.

If any damage has occured, please notify your dealer immediately so that a written claim can be initiated. Please also refer to the guarantee section of this manual.

3.0 MECHANICAL INSTALLATION

Adequate ventilation must be provided by allowing sufficient space around the sides and rear of the unit to ensure free circulation of air. Forced cooling is not required.

After a period of timethe unit will feel warm to the touch. This is quite normal, and should be no cause for alarm.

4.0 MAINS POWER

The BS 181 may be connected to the mains power outlet to which other audio equipment is connected. The outlet should have a clean earth. Avoid using mains power outlets which also power dimmer controlled lighting equipment.

The unit needs no voltage setting and accepts mains voltages from 90 - 240 V ac, 50/60 Hz.

The power cord supplied with this unit carries the following information label:

> ***WARNING***
> This appliance must be earthed

IMPORTANT
The wires in this mains lead are colour coded in accordance with the following code:

green and yellow	Earth / safety ground
blue	Neutral
brown	Live

As the colours of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked with the letter "E", or by the earth symbol which is ⏚ or coloured green.
- The wire which is coloured blue must be connected to the terminal which is marked with the letter "N" or coloured black.
- The wire which is coloured brown must be connected to the terminal which is marked with the letter "L" or coloured red.

Those units that are supplied to the North American market will have an integral moulded 3 pin connector which is provided to satisfy required local standards.

4.1 SAFETY EARTHING

The green-and-yellow wire of the mains cord must always be connected to the electrical installation safety earth or ground. It is essential for personal safety as well for proper operation of the BS 181 and the other connected stations. This wire is internally connected to all exposed metal surfaces.

4.2 POWERING UP

Powering up procedure:

- Make sure that the power switch on the left side of the front panel is OFF.
- Connect the power cord to the rear of the station.
- Plug the other end of the power cord into a PROPERLY GROUNDED outlet.
- Turn on the power with the red button, the green power LED will go on, indicating the station is active.

See for further installation and operation the concerning sections.

5.0 FRONT PANEL CONTROLS & CONNECTOR

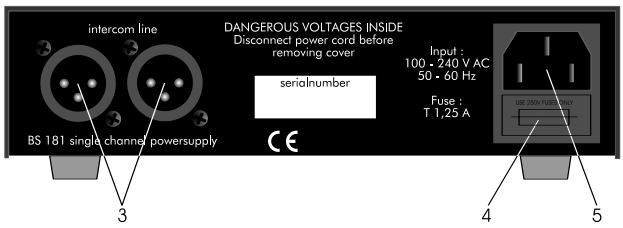
1 POWER ON/OFF switch
Mains power push button for switching ON and OFF the power supply.

2 POWER LED
This LED illuminates if line power is supplied by the internal power supply.

6.0 REAR PANEL CONTROLS & CONNECTORS

3 Line connectors
These XLR-3 type connectors are for connecting the user-stations, via standard microphone cable.

Pin assignments:
1. 0 V / ground shield
2. +30 V power wire
3. audio wire



4 FUSE
This fuse protects the BS 181 against severe internal damage, in case of malfunction in the power section. Disconnected the power cord before replacing the fuse.

It is most important to place the correct fuse in the holder :

90 - 240 VAC T 1250 mA

Spare fuses will be found in the small packet supplied with the unit.

An extra internal fuse is located on the printed circuit board, if neccesary replace this fuse ONLY with a 4A.

5 MAINS INLET
IEC Mains connector. For correct wiring and operation refer to section 4.0.

7.0 CABLING

For the BASIC Series Intercom system the interconnecting cables are of the shielded two-conductor microphone cable type and the intercom line connectors are of the XLR-3 type. Audio and Call signals are on XLR pin 3, DC power is on XLR pin 2. XLR pin 1 is connected to the shield of the cable which functions as the common return for audio and power.

Since the audio signal is transferred in an **unbalanced ★** way, certain rules have to be obeyed when installing the cables of an intercom network. This is to avoid earth loops and to minimize power loss and the possible effect of electromagnetic fields.

These rules are:

- **Use high quality (multipair) cable.**
  For interconnecting user stations, power supplies and accessories in an ASL Intercom network, use high quality shielded two-conductor (minimum 2x 0.30 mm2) microphone cable only.
  In case of a two channel intercom network, use high quality microphone 'multipair' cable only, each pair consisting of two conductors (minimum 2x 0.15 mm2) with separate shield. Multipair cable should also have an overall shield.

- **Use flexible cables.**
  Use flexible single and multipair microphone cable instead of cable with solid cores, especially when the cable is subjected to bending during operation or installation.

- **Separate cable screen to XLR pin 1.**
  The screen of each separate microphone cable and/or the screen of each single pair in a multipair cable, should be connected to pin 1 of each XLR-3 connector. Do not connect this cable screen to the metal housing of the connector or to metal wall boxes (outlets).
  See page 10 for Earthing Concept.

- **Cable trunks, connection boxes and overall multipair cable screen to clean earth.**
  Metal cable trunks, metal connection boxes and overall multipair cable screen should be interconnected and, at one point (the 'central earthing point') in the intercom network only, be connected to a clean earth or a safety earth.
  See page 10 for Earthing Concept.

- **Keep metal connection boxes and cable housings isolated from other metal parts.**
  Metal housings for intercom cables and connectors should be mounted in such a way that they are isolated from other metal cable and connector housings and from any other metal construction parts.

★ **See Party Line, Technical Concept**

- **Keep cables parallel as much as possible.**
  When two (two channel) units in a network are connected by more than one cable, make sure that these cables are parallel to each other over the whole distance between those units. When using multipair cable, parallelism is ensured in the best possible way.

- **Avoid closed loops.**
  Always avoid that cables are making a loop. So-called 'ring intercom' should not physically be cabled as a ring. All cable routes should have a 'star' configuration, with the central earthing point (usually close to the power supply position) as the centre of the star.

- **Keep cables away from electromagnetic sources.**
  Keep intercom cables away from high energy cables, e.g. 110/220/380V mains power or dimmer controlled feeds for spotlights.
  Intercom cables should cross high energy cables in at angle of 90° only.
  Intercom cables should never be in the same trunking as energy cables.

- **Place power supply in a central position.**
  In order to avoid unacceptable power losses, place the power supply as close as possible to where most power consumption occurs or, in other words, most user stations are placed.

- **Connect ASL power supply to a 'clean' mains outlet.**
  The ASL power supply may be connected to the mains power outlet to which other audio equipment is connected. Avoid using mains outlets which also power dimmer controlled lighting systems.

In case of more complex installations, don't hesitate to contact us. Please send us a block diagram of the planned network with a list of all user stations and their positions, and we are happy to advise you on cabling lay out.

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8.0 PARTY LINE, TECHNICAL CONCEPT

ASL's BASIC Series offers a complete two way ('full duplex') communications system.
Users of the system are connected via a 'party line'. Master stations (with built-in power supply), beltpacks and power supplies are interconnected via standard microphone cable. One wire is used as an audio line, one as a power line and the screen of the cable functions as earth/return.

Current drive is used for signal transfer. Each station utilises a current amplifier to amplify the microphone signal and place it on the common audio line where, due to the constant line impedance (situated in the power supply between XLR pin 3 and 1), a signal voltage is developed which can be further amplified and sent to the headphones.

This principle has three advantages:
- the use of a single audio line allows several stations to talk and listen simultaneously.
- due to the high bridging impedance offered by each station, the number of stations 'on line' has no influence on the level of the communications signal.
- power and audio to the intercom stations use the same cable.

The Call signal is also sent as a current on the audio line. It develops a DC potential over the line impedance which will be sensed by each station and interpreted as a Call signal.

9.0 GUARANTEE

This unit is warranted by ASL Intercom to the original end-user purchaser against defects in workmanship and materials in it's manufacture for a period of one year from date of shipment to the end-user.

Faults arising from misuse, unauthorised modifications or accidents are not covered by this warranty. If the unit is faulty it should be sent in it's original packing, to the supplier or your local ASL dealer, with shipping prepaid. A note must be included stating the faults found and a copy of the original suppliers invoice.

THIS PRODUCT WAS DESIGNED, DEVELOPED AND MANUFACTURED BY:

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MAARSSEN (UTRECHT) HOLLAND.
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10.0 TECHNICAL SPECIFICATIONS BS 181

POWER SUPPLY

mains voltage range	all units: 90 -240 V 50/60Hz AC
DC output voltage	+30 V +/-5% DC
ripple and noise	< 11 mV rms
max. output current	1,8 A continuous / 2,3 A peak

DIMENSIONS AND WEIGHT

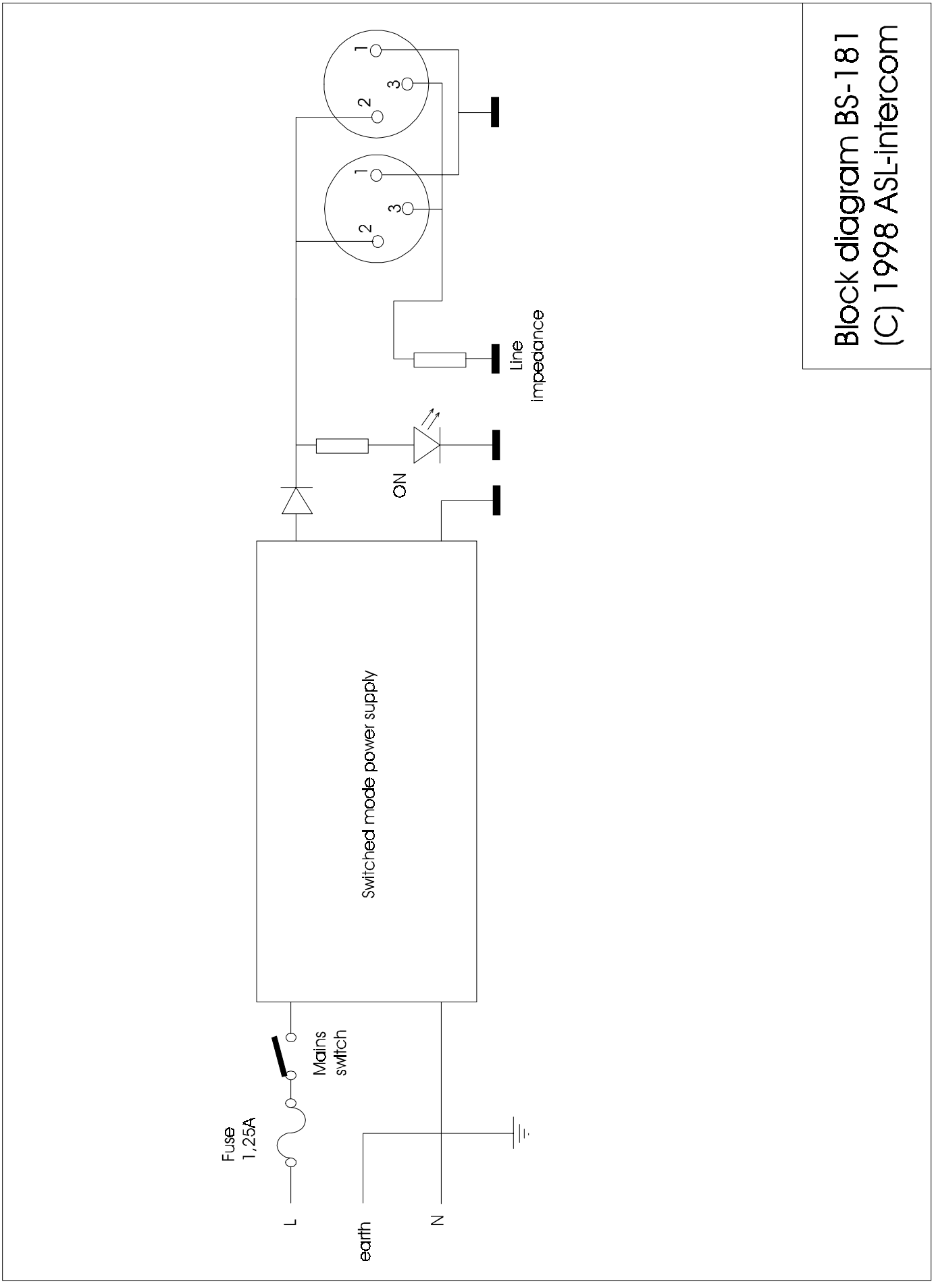
width	176 mm
height	42 mm
depth	139 mm
weight	0.9 Kg

GENERAL SYSTEM SPECIFICATIONS

intercom line impedance	350 ohms (1kHz) 2.2 Kohms (DC)
intercom line audio level	nom. -18 dBu max. +4 dBu
dynamic range	80 dB
call send signal	2.8 mA
call receive signal threshold	+2.4 V DC
supply voltage	+30 V DC (12 V to 32 V)

Note: 0 dBu = 775 mV into open circuit.

ASL reserves the right to alter specifications without further notice.


Block diagram BS-181
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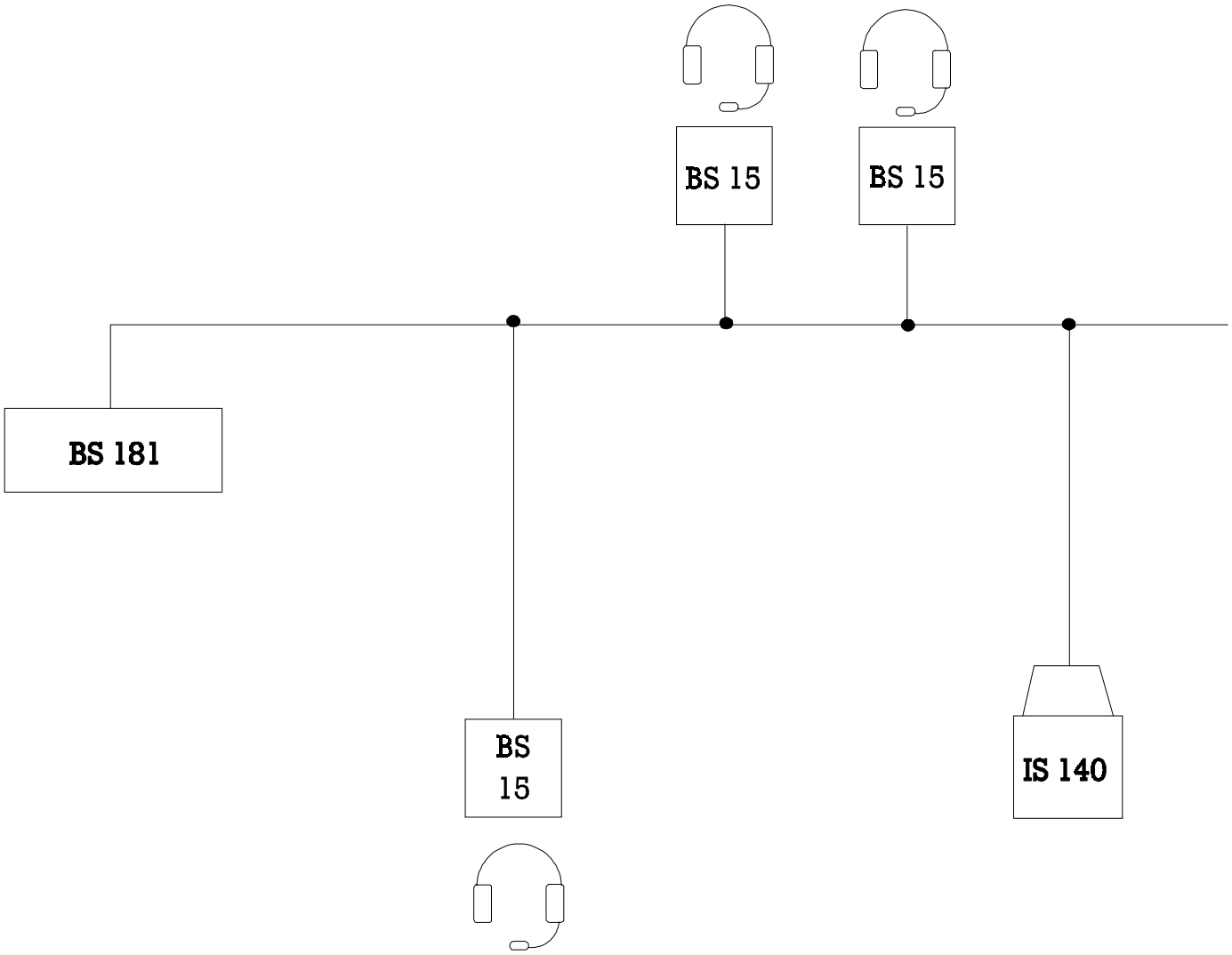
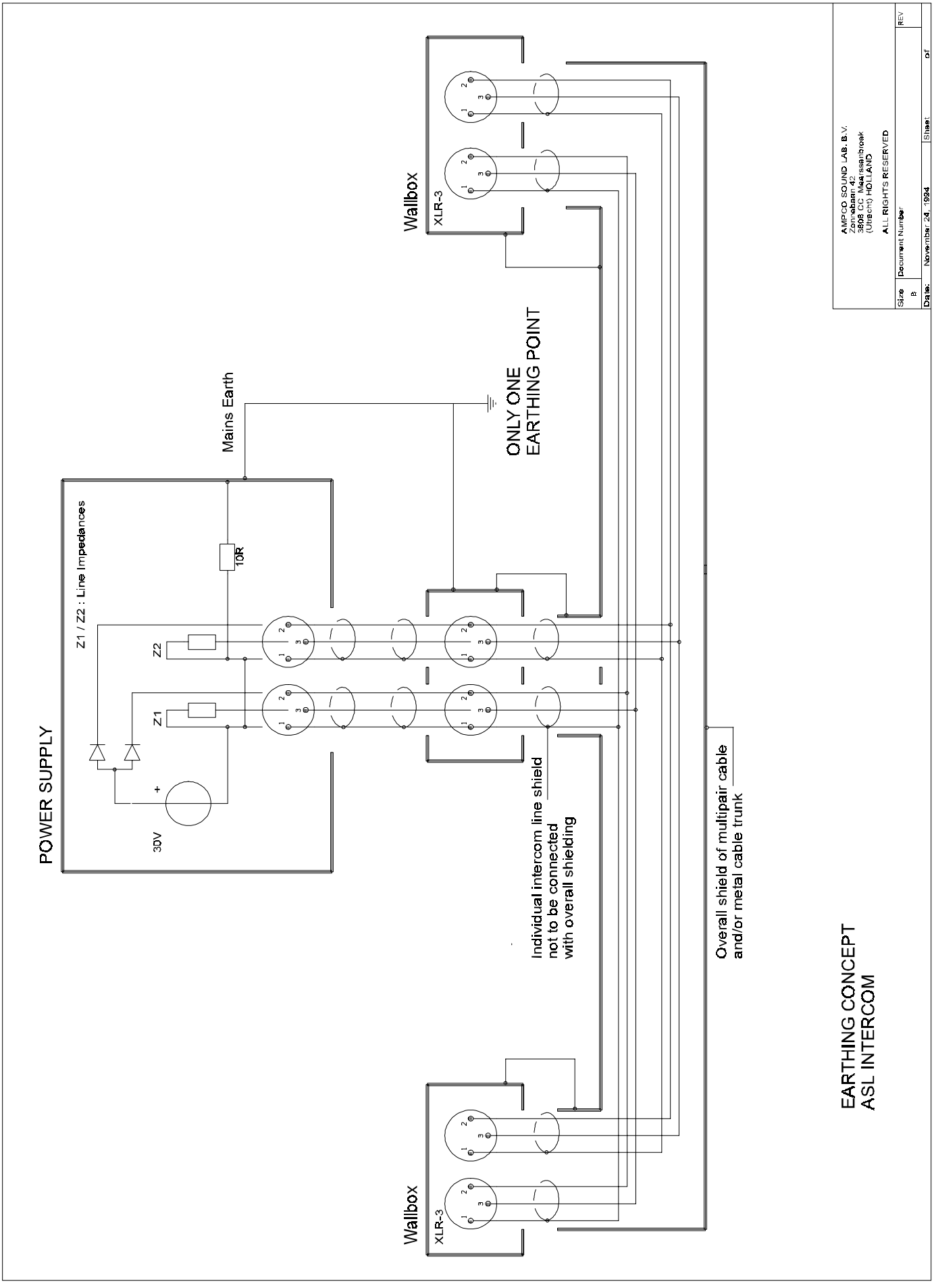
1
2
3
1
2
3
Line
impedance
ON
Switched mode power supply
Mains
switch
Fuse
1,25A
L
earth
N



BS 15 : 1 CHANNEL BELTPACK
BS 181 : 1 CHANNEL POWERSUPPLY
IS 140 : SOUND & LIGHT BEACON

1 CHANNEL SYSTEM CONFIGURATION


EARTHING CONCEPT
ASL INTERCOM
AMPCO SOUND LAB. B.V.
Zonnebaan 42
3606 CG Maarssenbroek
(Utrecht) HOLLAND
ALL RIGHTS RESERVED
Size
B
Document Number
REV
Date: November 24, 1994
Sheet
of
POWER SUPPLY
Z1 / Z2 : Line Impedances
10R
Z2
Z1
+
30V
Mains Earth
ONLY ONE
EARTHING POINT
Wallbox
XLR-3
Individual intercom line shield
not to be connected
with overall shielding
Overall shield of multipair cable
and/or metal cable trunk
Wallbox
XLR-3